

REMARKS

In the Office Action dated February 22, 2010 and marked final, the Examiner rejects claims 24 and 25 under 35 U.S.C. § 102(b) and rejects claims 1, 3, 7-13, 16, 18-20, 22 and 23 under 35 U.S.C. § 103(a). With this Amendment, claims 6 and 12 are amended. Claims 2, 4, 5, 14, 15, 17 and 21 were previously canceled. After entry of this Amendment, claims 1, 3 and 6-13, 16, 18-20 and 22-25 are pending in the Application. Reconsideration of the Application in light of the arguments below is respectfully requested. Entry of this amendment pursuant to 37 C.F.R. § 1.116 is requested as it adds no new matter and places the claims in better condition for allowance or, alternatively, appeal.

The Examiner has not rejected claim 6 in the Office Action. The Examiner states in sections 4 and 7 of the Office Action that the previous rejections of claim 6 have been withdrawn. The Applicants cannot adequately respond to the Office Action as the status of claim 6 is unclear. Accordingly, the Office Action is incomplete its finality should be withdrawn.

Rejections under 35 U.S.C. §102(b)

Claims 24 and 25 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Munshi (US 6,664,006). The Examiner contends that Munshi teaches or suggests each and every element of Applicants' claims 24 and 25.

Munshi teaches the use of a metal substrate. "As a substrate for one of the above-described active electrode materials, an ultra thin metal substrate is preferably employed for assembling a thin film lithium polymer electrolyte rechargeable battery." (Col. 21, ll. 46-49). "Alternatively, the electrode/electrolyte structures may use metalized plastic or polymer substrate current collectors . . . instead of the above-described very thin metallic element." (Col. 21, line 66- col. 22, line 2). As yet another alternative, "the polymer substrate of an electrode may be impregnated with an electronically conductive element that is inert to the active electrode and metallized on both sides of the substrate without a margin a metalized polymer substrate." (Col. 22, ll. 28-31). Applicant's claim requires that the collector consist

essentially of an electrically conductive polymer. Munshi clearly describes a collector that has electrically conductive polymers as being metalized on both sides. Only the collector comprising a polymer that is impregnated with an electronically conductive element is referred to by Munshi in col. 22, ll. 52-53: “metallization of the impregnated polymer substrate is optional.”

The Examiner states in his response to arguments that a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including non-preferred embodiments. Applicants agree. Munshi, considering every embodiment it discloses, clearly teaches that either a metal substrate or a metalized substrate is necessary unless the polymer is impregnated with an electronically conductive element. Alternative embodiments in Munshi would also meet these limitations. These teachings of Munshi do not fall within the scope of Applicants’ claim 24, so Munshi cannot anticipate claim 24.

The Examiner states in his response to arguments that the phrase consisting essentially limits the scope to the specified materials and to those that do not materially affect the basic and novel characteristics of the claimed invention. Applicants agree. As noted by Applicants in paragraph [0025], by making a collector from materials including high-polymer materials, it may be possible to trim the weight of the collector and improve the energy density without reducing battery performance. Clearly having to impregnate Applicants’ polymer with a conductive element or having to use layers of metal would go directly against what Applicants are trying to achieve with this invention. Further, Munshi clearly treats the impregnation of the polymer with a conductive element as critical as it is the only embodiment that does not require metalized layers. Accordingly, there is a clear indication in the specification as to what the basic and novel characteristics actually are. It is also clear that impregnating a polymer with a conductive element is material and is therefore not within the scope of the claim.

Accordingly, Munshi does not anticipate claims 24 and 25. Applicants respectfully submit that the claims are allowable over Munshi.

Claim 24 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Fukuzawa et al. (JP 2004-179053). The Examiner contends that Fukuzawa et al. teaches or suggests each and every element of Applicants' claim 24. Fukuzawa et al. teaches a collector composed of a metal powder and a resin binder that may be a conductive polymer. Again, this does not meet the scope of claim 24, which requires that the collector consist essentially of an electrically conductive polymer. That is, Fukuzawa et al. includes an additional metal powder that is clearly material to the collector of Fukuzawa et al., whereas the conductive polymer is optional. As noted by Applicants in paragraph [0025], by making collector from materials including high-polymer materials, it may be possible to trim the weight of the collector and improve the energy density without reducing battery performance. Having to impregnate Applicants' polymer with a metal powder as described in Fukuzawa et al. would go directly against what Applicants are trying to achieve with this invention. Accordingly, there is a clear indication in the specification of what the basic and novel characteristics actually are. It is also clear that incorporating metal powder into a polymer is material and therefore not within the scope of the claim.

The Examiner states in his response to arguments that a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including non-preferred embodiments. Again, Applicants agree. However, Fukuzawa et al. clearly teaches that metal powder is necessary and a conductive polymer is optional. No embodiments of Fukuzawa et al. fall within the scope of Applicants' claim 24.

Accordingly, Fukuzawa et al. does not anticipate claim 24. Applicants respectfully submit that the claim is allowable over Fukuzawa et al.

Rejections under 35 U.S.C. §103(a)

The Examiner rejects claims 1, 3, 8, 10, 11, 22 and 23 under 35 U.S.C. § 103(a) as being unpatentable over Munshi in view of Hisamitsu et al. (US 2004/0126655). As noted by the Examiner, Munshi does not teach or suggest the feature of independent claims 1 and 10 that the electrically conductive particles include a first type and a second type, where the first

type contacts the cathode and the second type contacts the anode. However, the Examiner contends that Hisamitsu et al. does suggest this.

Hisamitsu et al. teaches that the collecting layers can be made of different materials. Specifically, the collecting layers may include two types of layers. ([0036]). “In this case, it is preferable that the fluid for forming the collecting layer 212a on the side of the positive electrode layer 211a contains carbon fine particles, and the fluid for forming the collecting layer 212c on the side of the negative electrode layer 211c contains copper fine particles. Needless to say, in this case, printer heads are required for the fluids, respectively.” ([0046]). Accordingly, Hisamitsu et al. teaches the use of two collector layers. The layer contacting the anode may be different from the layer contacting the cathode. However, there is no teaching or suggestion of a single layer collector comprising two different types of particles, wherein the distribution of the particles within the collector may be changed. ([0029]). Accordingly, combining Hisamitsu et al. with Munshi would suggest to one skilled in the art at the time the invention was made to use two of the collector layers of Munshi impregnated with different particles. This is not what is claimed in claim within the scope of the claim. Furthermore, one skilled in the art with the objective to make a thinner and lighter battery would not be inclined to use an additional collector layer as taught by Hisamitsu et al., as this would increase the thickness and the weight of the battery. Therefore, the combination of Munshi and Hisamitsu et al. does not teach suggest or render obvious a collector having two types of particles. Furthermore, Hisamitsu teaches away from the objection of Applicants’ invention. Applicants submit that claims 1, 3, 8, 10, 11, 22 and 23 are in condition for allowance.

The Examiner rejects claims 12, 13, 16 and 18-20 under 35 U.S.C. § 103(a) as being unpatentable over Munshi in view of Hisamitsu et al. Claim 12 has been amended to conform to the description of the collector in claim 24, namely clarifying that the collector consists essentially of electrically conductive polymer. Applicants submit that this is a feature already searched and considered with respect to claim 24, so additional search and consideration is not involved with this amendment to claim 12.

Applicants have described above with respect to claim 24 how Munshi fails to teach or suggest such a collector. Applicants further submit that Hisamitsu et al. fails to teach or suggest a collector consisting essentially of electrically conductive polymer. Accordingly, the combination fails to render the invention of claim 12 and its dependent claims obvious. Applicants respectfully submit that claims 12, 13, 16 and 18-20 are allowable over the combination.

The Examiner rejects claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Munshi and Hisamitsu et al. as applied to claims 1, 3, 8, 10 and 11 and further in view of Hwang et al. (US 2005/0084760). Claim 7 depends from claim 1 to include all of the limitations therein. As described above, the combination of Munshi and Hitsamitsu et al. fails to teach or suggest each and every limitation of claim 1. Therefore, the combination of Munshi, Hitsamitsu et al. and Hwang et al. would need to cure those deficiencies. Hwang et al. fails to teach or suggest the same elements that both Munshi and Hitsamitsu et al. omit -- a collector comprising the high-polymer material containing a plurality of electrically conductive particles, wherein the plurality of electrically conductive particles comprises a first and second type of electrically conductive particles, wherein the first type contacts the cathode and the second type contacts the anode, as recited in claim 1. Therefore, Hwang et al. does not cure the deficiencies of Munshi and Hitsamitsu et al. At least by its dependency from claim 1, the invention of claim 7 is not rendered obvious by the cited combination.

The Examiner rejects claim 9 under 35 U.S.C. § 103(a) as being unpatentable over Munshi and Hitsamitsu in view of Usui et al. (US 6,656,232). Claim 9 depends from claim 1 to include all of the limitations therein. As described above, Munshi and Hisamitsu et al. fail to teach or suggest each and every limitation of claim 1. Therefore, the combination of Munshi, Hitsamitsu et al. and Usui et al. would need to cure those deficiencies. Usui et al. fails to teach or suggest the same elements Munshi and Hitsamitsu et al. omit -- a collector comprising the high-polymer material containing a plurality of electrically conductive particles, wherein the

plurality of electrically conductive particles comprises a first and second type of electrically conductive particles, wherein the first type contacts the cathode and the second type contacts the anode, as recited in claim 1. Therefore, Usui et al. does not cure the deficiencies of Munshi and Hitsamitsu et al. At least by its dependency from claim 1, the invention of claim 9 is not rendered obvious by the cited combination.

Conclusion

Applicants respectfully submit that this Amendment has antecedent basis in the Application as originally filed, including the specification, claims and drawings, and that this Amendment does not add any new subject matter to the Application. Reconsideration of the Application as amended is requested. It is respectfully submitted that this Amendment places the Application in suitable condition for allowance; notice of which is requested.

If the Examiner feels that prosecution of the present Application can be expedited by way of an Examiner's amendment, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,
YOUNG BASILE HANLON &
MACFARLANE, P.C.

Francine B. Nesti
Registration No. 53376
(248) 649-3333

3001 West Big Beaver Rd., Ste. 624
Troy, Michigan 48084-3107